

REBECCA-DB.A

An open source flexible database for managing data from energy cane



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REBECCA is a research project [1] conducted in Guadeloupe that aims to generate electricity from cane fibre. Varieties are selected with a low water content and high calorific value and to find cultural practices allowing production all of the year. To analyze the experiments results, a relational database REBECCA-DB.A was developed.

Experiments and methods



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Experiments.

2 sets of experiments :

- Varietal experiments, harvested at 8 and 12 months to study the biomass yield, fibre content and low heating value of dry biomass (LHVd).
- Agronomic experiments, planted at 3 dates and harvested after 6,8 or 12 months.

Stalks were measured at different stages of crop cycle. The quality of the biomass was assessed by spectroscopy of reflectance in the near infrared (NIRS). A single code name allowed the identification of each sample from the field to the laboratory.

REBECCA-DB.A tool

The relational database includes data relating to non-destructive and destructive measurements conducted in varietal and agronomic experiments and NIRS analysis collected. It allow to store, to share and manipulate field and laboratory data.

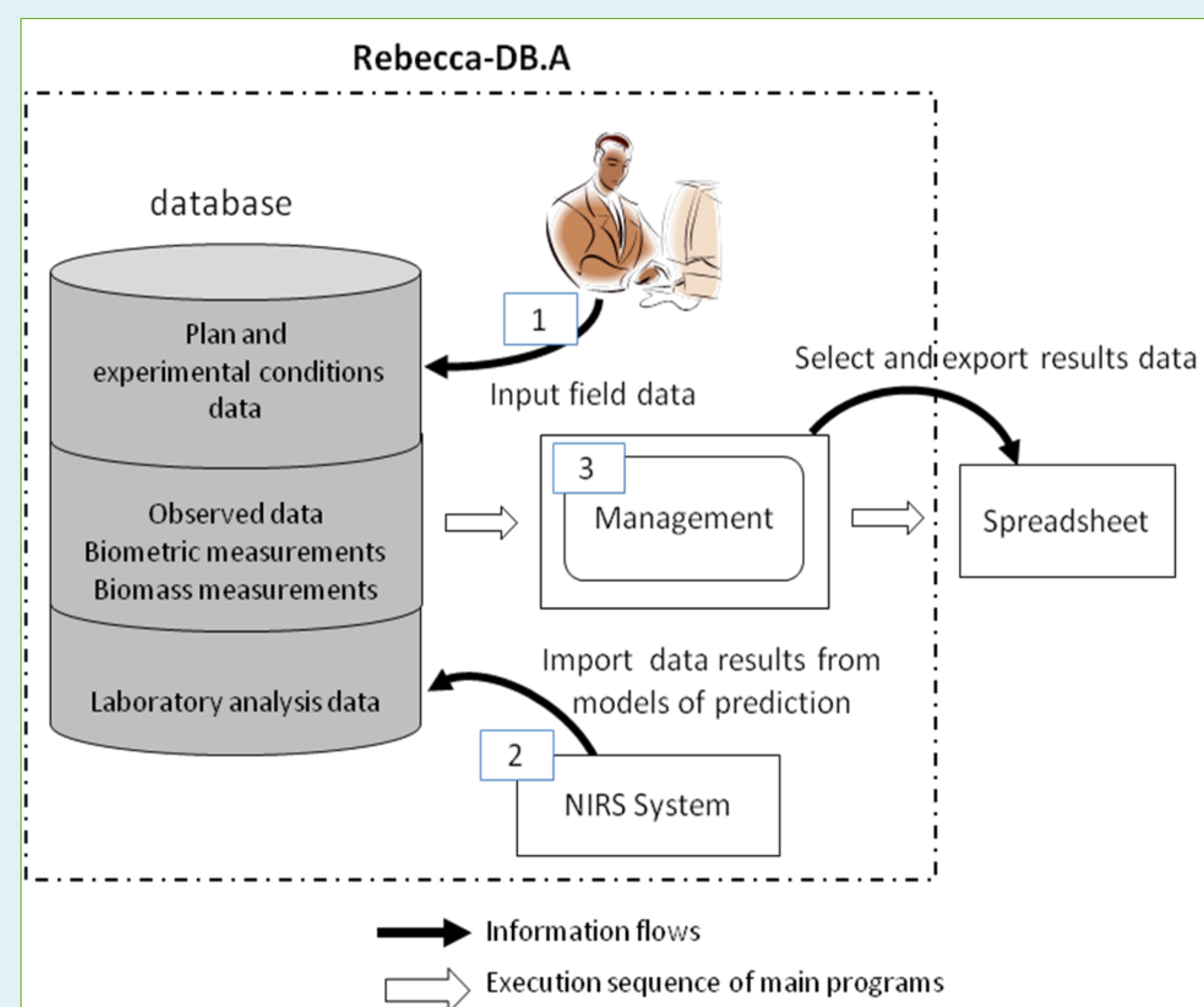


Figure 1 : REBECCA-DB.A processing.

1. Field data are entered manually from input screen
2. Fibre content and LHVd analysis are automatically imported in database form NIRS system
3. Stored data can be selected, updated and exported.

Conclusion

REBECCA-DB.A contributed to selecting the best 3 cultivars among 35 taking into account the main functional characteristics for energy use [2]. Agronomic and genotypic data stored in database were used as input data in other tools to carry out environmental and economic research of the project. REBECCA-DB.A could be adapted for other applications on energy or fibre cane studies or varietal selection projects on sugarcane. This is a free tool within the scientific community.

References

- [1] Chopart J.L. (2012). REsearch Biomasse Energy Cane at Capesterre (Guadeloupe). The REBECCA Project in some words. Note Cirad REBECCA, 1p.
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- [3] Auzoux, S., Chopart, J.L. and De Saint-Seine, G. (2011). REBECCA-BD.A base de données agronomiques du programme REBECCA: présentation et guide de l'utilisateur. Scientific note REBECCA n°3, Cirad, Montpellier, 17p.

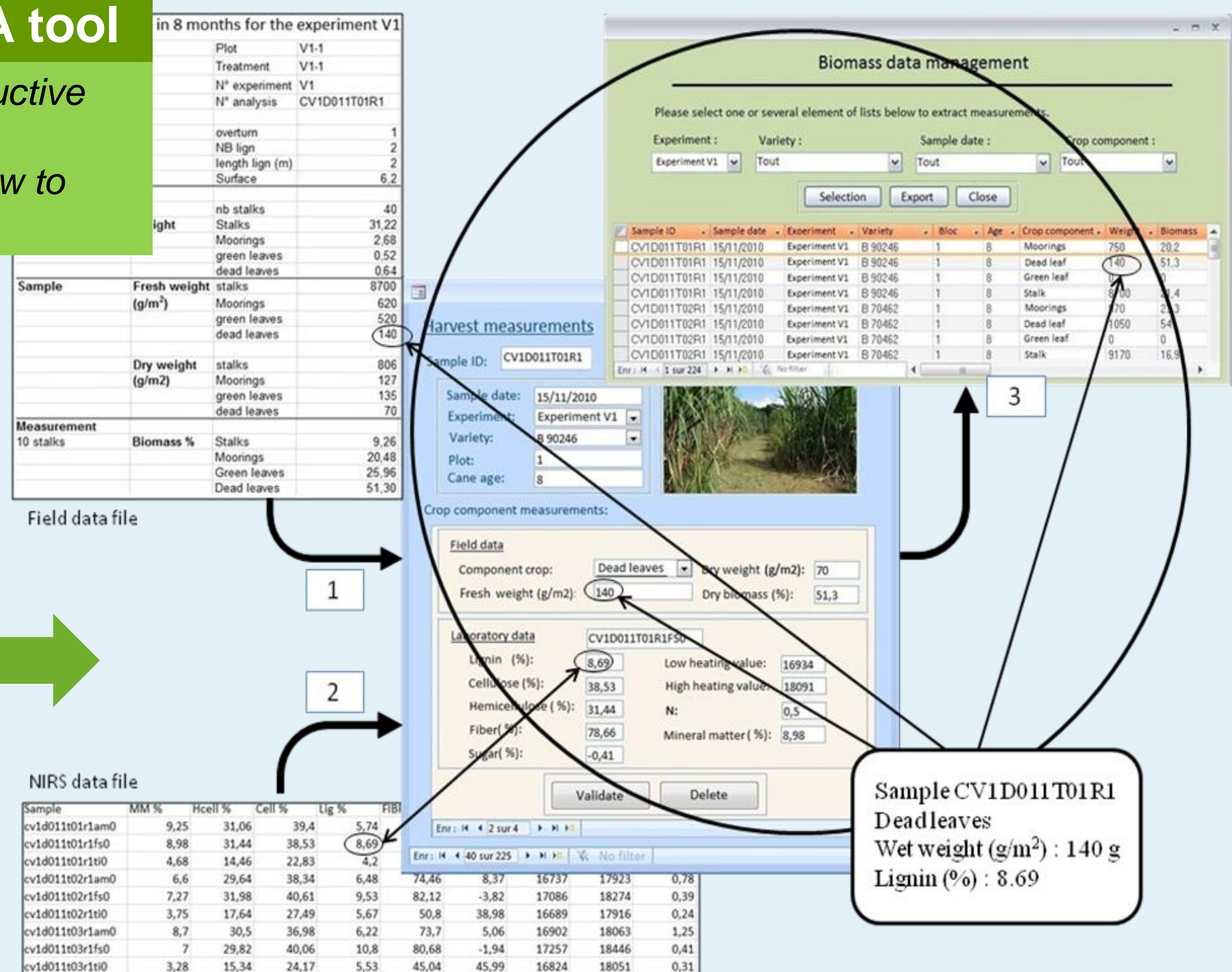


Figure 2: Example of REBECCA-DB.A guidelines for biomass data.

1. Field data is reported in REBECCA BD-A thanks to easy-to-use forms.
2. Results of NIRS analysis can be manually entered in the specific frame "laboratory data" or the NIRS data file can be directly imported in database.
3. Stored data can be filtered with the name of experiment, the variety, the sample date and the crop component. Selected data can be exported to a spreadsheet.